THE

VETERINARY JOURNAL

Editor:

FREDERICK HOBDAY, C.M.G., F.R.C.V.S., F.R.S.E.,

HONORARY VETERINARY SURGEON TO HIS MAJESTY THE KING.

OFFICIER DU MERITE AGRICOLE (FRANCE).

CAVALIERE DEI S. S. MAURIZIO E LAZZARO (ITALY).

HONORARY MEMBER OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION.

AND FORMERLY PROFESSOR IN THE ROYAL VETERINARY COLLEGE, LONDON.

Sub-Editor:

GLADSTONE MAYALL, M.R.C.V.S.

MAY, 1921.

Biography.

THE LATE MR. ALEXANDER INGLIS MacCALLUM, J.P., M.R.C.V.S.

THE name of the late Mr. Alexander Inglis MacCallum will ever be remembered with gratitude by the Edinburgh veterinary student and be coupled with that of his famous predecessor, the late Professor Dick, as one of the most prominent benefactors to veterinary education in Scotland. It is largely by the generous bequests of these two men that Edinburgh can now claim to have a school which stands second to none in buildings and teaching equipment in the British Isles.

Commencing life in comparative poverty, his acquisition of wealth is an illustration of what steady perseverance and determination can do, and his final useful distribution of it in the aid of veterinary education is an example which it is hoped may be copied by others. Born in 1845, at Maybole, Ayrshire, he was apprenticed to a medical practitioner in that town, but after a brief period of this life young MacCallum set his heart upon qualification as a veterinary surgeon. With this object in view he saved up all the money he could and went to Edinburgh, where he entered the Clyde Street College, also carrying on his studies as an apothecary.

In due time he graduated, and then settled down in Edinburgh, keeping a chemist's shop and carrying on the practice of a veterinary surgeon at the same time. His skill and attention to business brought its reward, and his thrift made him one of the richest men in the profession. When the question came up regarding the site and proposed establishment of new buildings for the Royal (Dick) Veterinary College, Mr. MacCallum generously offered the sum of £15,000 towards

the endowment of a Chair of Anatomy, and a few years afterwards a further £10,000 was donated. This by no means represents the limit of his help, and the profession, as well as the Dick College, have much to thank him for. For many years, as a Justice of the Peace, he held a seat on the Bench of Magistrates. He was a man whose opinion was much respected and sought after in other ways than in those pertaining solely to the practice of veterinary medicine and surgery, and his name will always occupy a place upon the roll of those who have left the world better than they found it.

Editorials.

ENCOURAGEMENT NEEDED FOR POST-GRADUATE VETERINARY EDUCATION.

POST-GRADUATE education is as essential to veterinary science as to any other, and the time has come when it is an absolute necessity for such to be provided. At the present time the graduates of our profession are very insufficiently catered for in this respect in that very few facilities are provided in the way of research scholarships or other means whereby the impecunious student can afford to gratify his wish. Even where post-graduate courses are provided a man must pay for the entire cost of study and keep himself, during the time this is being taken, out of his own pocket. Unfortunately most of our graduates are poor, and have to depend upon their own exertions when once the diploma has been gained. For the brilliant and persevering student (and we have a fair proportion), desirous of following up original research, pecuniary help is necessary in the form of research scholarships or in other ways, open of course to fair competition.

The medical profession have ample scope in this direction, and it is quite time that we, too, made a move.

The practitioner of to-day is far in advance, professionally, of his predecessor, but veterinary knowledge is ever advancing, and post-graduate teaching should be within the reach of all; and the practitioner of many years' standing should be catered for as well as the recent fledgeling. If brief courses could be arranged at our colleges, to include up-to-date medicine and surgery, and particularly to supply in a brief course of lectures and practical demonstrations the latest mundane things of daily interest to the practitioner, as well as those special points needed for the Public Health Services at home and abroad, there is no doubt that the profession would give a liberal response, which would adequately remunerate those who taught and add knowledge to those who sought it.

THE NEED FOR CLOSER COLLABORATION BETWEEN HUMAN AND VETERINARY MEDICINE.

One cannot help but be struck by the more constant allusions lately, by members of both professions, not only in the Press but at our scientific and social gatherings, of a need for closer collaboration between human and veterinary medicine. In last month's issue the medical officer of health for a district in Yorkshire, writing on a case of canine sarcoptic mange affecting a family, and definitely stated to have been communicated to them from a pet dog, stated that in his opinion medical students should receive special instruction on the diseases of animals communicable to man.

The two combined meetings of the Royal Society of Medicine and the Central Veterinary Medical Society have given ample proof of the value of such collaboration, and in the after-dinner speeches of the last meeting of the Lancashire Veterinary Medical Association the subject was plentifully alluded to. Professor Dean, of Liverpool University, assured the members " that they in the medical profession valued nothing better than to work in close harmony with the members of the veterinary profession," but Professor Yorke (of the Liverpool School of Tropical Medicine) stated that " he was becoming more and more impressed with the fact that the two branches of the one profession did not work sufficiently in harmony. They met on occasions like that but not in their daily working." It is the latter paragraph which should receive most attention and consideration, quite as much on the part of the medical profession as ourselves, for the medical branch (especially the Public Health Department) does not yet realise what it is missing by not encouraging a closer collaboration. Mr. McKinna, ex-President Royal College of Veterinary Surgeons, also at the Lancashire meeting, hit the nail on the head when, in complaining that " he did not think sufficient harmony existed between the two branches and he felt they ought to get in closer co-operation with the medical profession," concluded his speech with the remark, " and that medical officers might ask their advice more often." It would certainly help the common fight against disease if this was done and it is up to us to do all in our power to further the object from our side by keeping ourselves abreast of the times, both in our theoretical reading and practical application. Every branch of the profession can, if it will, find daily value in this collaboration, and each individual member can, by his own example, do much. The " watertight compartment " day has passed. Let us therefore prepare ourselves for the future, as in Veterinary Public Health (and this means closer collaboration with human medicine) lies one of the biggest outlooks of the profession. The protection of the general public from the

ravages of diseases such as glanders and rabies, diseases which can only come to mankind from animals, depends entirely upon the vigilance of the veterinary profession, and neither the public nor the medical profession as a body have fully realised this. Perhaps we, as a profession, work too silently or modestly. Certainly we do not assert the importance of our work as vigorously as we might do, and a little more knowledge on the part of the general public would also be beneficial to the progress of our profession.

DEVELOPMENT COMMISSION.

Advisory Committee on Research into Diseases of Animals.

An advisory committee has recently been appointed "to report on the facilities now available for the scientific study of the diseases of animals, to indicate what extension of those facilities is desirable in the immediate futute in order to advance the study of disease (whether in animals or man), and to advise as to the steps which should be taken to secure the aid of competent scientific workers in investigating diseases in animals."

The Committee consists of the following gentlemen :—

Lt.-Col. Sir David Prain, C.M.G., C.I.E., LL.D., F.R.S. (Chairman).
Professor O. Charnock Bradley, M.D., D.Sc., M.R.C.V.S., F.R.S.E.
Capt. Walter Elliott, M.C., M.P.
Sir W. Morley Fletcher, K.B.E., M.D., F.R.S.
Major-General Sir William B. Leishman, K.C.M.G., C.B., F.R.S.
Sir John W. Frodyear, M.B., B.Sc., M.R.C.V.S., LL.D.
Professor Charles J. Martin, C.M.G., D.Sc., F.R.S.
Mr. F. B. Smith, C.M.G.

Numerous witnesses are to be examined, and it is to be hoped that the result will be of benefit to the profession in the way of encouraging facilities for research.

General Articles.

DOMESTIC ANIMALS AS A FACTOR IN THE SPREAD OF INFECTION.*

By WILLIAM G. SAVAGE, B.Sc., M.D. (Lond.),
Medical Officer of Health, Somerset C.C.

Real progress in the prevention of the spread of infectious diseases —using the term in its widest sense—can only be attained by an extension of exact knowledge as to the paths and methods of infection and the factors affecting the resistance of the individual. This truism is worth restating since it is so frequently neglected in practice. The present discussion only deals with one small aspect of this huge

* Abstract from the Journal of the Royal Sanitary Institute.

problem, but it is one upon which we need to come to clear and definite conclusions and to decide precisely to what extent, and how, domestic animals are factors of spread of infectious disease to man.

It would be impossible for me to give even a general survey of the subject in the time at my disposal. Tuberculosis alone could occupy us for a day, so I propose to take three examples of alleged association between human and animal disease, leaving it to others to discuss other aspects of the subject. They are selected because I have devoted many years of investigation to them, and illustrate very well the need for exact knowledge which can only be acquired by prolonged investigation.

Bovine Mastitis and Human Disease.

Mastitis in cows is a rather common condition, and it is important to know definitely how far it is a menace to health. My own investigations and those of other observers show that it may be caused by a number of different bacteria. The chronic form is usually due to the tubercle bacillus or less commonly to actinomycosis. There is considerable discrepancy amongst authorities as to the prevalence of cows with tuberculous udders. There are evidently considerable differences according to the district. Probably the average prevalence is about 1 per cent. This is the most important source of tubercle bacilli in milk and a potential cause of human tuberculosis.

The association of the acute variety with human disease is far less direct, and has required a good deal of unravelling. Of 35 acute cases which I investigated very thoroughly for the Local Government Board in 1907-08, over 70 per cent. were due to streptococci, the remainder being due to staphylococci (over 16 per cent.), one to *B. coli* and the others were of doubtful bacteriology. The point of practical importance in the present connection is the extent to which these streptococci and staphylococci are capable of causing human disease when ingested in raw milk. Since it is by no means infrequent for the milk from animals affected with acute mastitis to be added to the common supply and used for human consumption, I made an extended study of the streptococci from mastitis cases. The *streptococcus mastitidis* very closely resembles the pathogenic streptococci of man, as found in cases of sore throat and from other sources, in morphological and cultural characters, but in my experiments differed in pathogenicity. This bovine type was of low virulence to animals but readily set up mastitis in goats. The human strains possessed considerable pathogenicity for laboratory animals, but 13 out of 15 strains were unable to produce mastitis in goats when introduced by way of the teat canal. The remaining two strains did produce some degree of mastitis in the goat. These results showed the striking and

distinctive fact that there was an essential difference of function separating the two groups, and that it could be deduced that under ordinary conditions the *streptococcus mastitidis* is not a cause of human disease. So convinced was I of the accuracy of this deduction that on two separate occasions I infected my own throat with massive doses of this streptococcus, isolated only a day or two previously from cases of cow mastitis. On both occasions no ill effects were experienced constitutionally or locally, and the streptococcus could only be recovered with extreme difficulty from my throat, showing that it was a type of organism in an alien habitat.

While my extended investigations conclusively demonstrated that the ordinary case of bovine mastitis was not a cause of human disease, it left unexplained the undoubted fact that from time to time extensive outbreaks of sore throat and other septic conditions had been traced to milk infected from cows suffering from mastitis. In my book on "Milk and the Public Health," published in 1912, I summarised particulars of over 20 outbreaks of these diseases due to milk, in a good many of which the cause was traced back to cows suffering from this condition, while in 1905 I had described in detail, and fully investigated, such an outbreak involving over 600 cases and definitely traced to such an infective cow.

I was able to supply an explanation of this apparent inconsistency. While I found that *streptococcus mastitidis* was the usual organism of bovine mastitis, it was not the only type of streptococcus associated with this condition. In one case, for example, a streptococcus of extremely high virulence to rodents was found to be the cause of the mastitis, and of a type distinctive from the *streptococcus mastitidis*.

In a paper I read in February, 1911, before the Epidemiological Section of the Royal Society of Medicine I advanced the view that the ordinary type of bovine mastitis is due to organisms non-virulent to man, but that in certain uncommon cases this condition is caused by streptococci highly pathogenic to man. In the same paper I propounded the hypothesis that the cases in which this type of organism occurred were examples of infection of the cow from a human source. To quote my words: "Briefly stated, I regard the bovine udder and teat lesions, as commonly met with, as of purely bovine origin and, as such, harmless to man. Occasionally, either as an invasion superadded upon the original bovine lesions or as a primary infection of the milk organs, there is a local infection with organisms of human origin. In such cases the conditions present may be decidedly prejudicial to man. In other words, the cow, in this class of infection, is only potentially pathogenic to man when it acts as an active or passive carrier of organisms of *human* origin."

These investigations and views were contained in papers written between 1907 and 1911. At that time there were no recorded outbreaks of sore throat, etc., reported in America, but in 1911 and subsequent years a number of extensive outbreaks occurred at Boston, Chicago, Baltimore, and other cities which led to an extended series of careful investigations in America which are of great value and have considerably increased our knowledge. They have, for example, been able to further differentiate the human type of streptococcus in bovine mastitis by means of hæmolytic tests, and have shown that the strains dangerous to man are always hæmolytic, while the streptococcus of ordinary bovine mastitis is non-hæmolytic. Davis and Capps have shown that hæmolytic streptococci of human origin may cause mastitis lasting for several weeks in cows, this time roughly corresponding to the duration of milk-borne epidemics. The streptococci may gain access from an infection from the milker, whose hands are contaminated, perhaps, from a sore throat.

By means of the tests advocated by me and these additional tests it is possible to state with reasonable exactitude whether particular strains of streptococci isolated from the udders of cows are of the human pathogenic type or of the comparatively harmless bovine type.

In an outbreak in Boston in 1917 (reported January, 1920, by Brown and Orcutt), it was possible to identify the particular infective strain both from the mastitis fluid and from the sore throats of the sufferers. An endeavour was made to trace the source of infection of the cow, and this particular strain was isolated from the throats of a number of the employees of the dairy, but the data was insufficient to connect any one of these individuals definitely with the infection of the cow.

These American results afford very striking confirmation of the hypothesis described above, enunciated from my own investigations, and long before any of the American work was carried out. The precise relationship of this condition to human disease may now be said to be worked out fairly clearly.

Food-Poisoning—Outbreaks and Domestic Animals.

We now possess fairly exact knowledge of the relationship of unsound food conditions to individual cases and extensive outbreaks of food poisoning, but this knowledge is not widely disseminated, while certainly it is not usually acted upon in administrative work. It is therefore worth while defining clearly the present stage of our knowledge.

We may accept it as definitely established that all, or almost all, the outbreaks involving groups of persons and probably most of the smaller outbreaks involving only a few individuals, are due to an

infection of the food eaten with members of a particular group of bacilli, the Gaertner group, the infecting bacilli being either *B. enteritidis, B. suipestifer,* or *B. aertrycke.* The actual source of infection of the food is, in the majority of cases, not *intra vitam* from infected animals, but through secondary infection of sound food. In a minority, but still a very considerable proportion, it is due to infection of the living animal with one of these bacilli.

For the latter group of cases we need to arrive at an accurate conception of the nature of the diseases and conditions affecting domestic animals which may render them liable to originate outbreaks of food poisoning. Even yet we cannot answer this question with precision, but we do know a good deal about the conditions, both which do not and which do render the meat or milk a source of acute food-poisoning outbreaks.

Amongst those which do not we must place first, on account of its great administrative importance, tainted and putrefactive food. That such food causes attacks of food poisoning in individuals is usually assumed, but the evidence is most unconvincing, and that it cannot originate widespread outbreaks is practically certain. To produce such outbreaks the food must be specifically infected with a member of the Gaertner group, and these organisms are not a cause of tainted food.

Apart from secondary infection of the food in course of preparation for sale or consumption, the only direct source of infection from an animal used for food is either when it is suffering from some form of disease associated with this group of bacilli or is acting as a carrier of these bacilli.

In only a few of the recorded British outbreaks is there direct evidence of disease in the animals supplying the peccant food. In several cases where milk has been the vehicle the condition has been traced back to infection of the cow with a member of the Gaertner group. The only two instances which I have been able to trace, spread by meat from a diseased animal, are those at Murrow and at Limerick. On the other hand, the continental outbreaks show this association much more frequently.

Animals used for food undoubtedly may be infected with these bacilli, the pathological conditions found being commonly gastro-enteritis, udder disease, puerperal sepsis, and local abscesses. We require a good deal more exact information as to the etiological association of these diseases. I have made a number of examinations, but lack of material has limited my opportunities.

We have also to recognise that animals suffering from Gaertner group infections may recover from such conditions, but the bacilli

persist, the animals acting as carriers, and undoubtedly a number of outbreaks have originated from the meat of sound animals being infected (by splashing, etc.) from the intestinal contents of such carrier cases.

I think I may claim that my protracted investigations carried out for the Local Government Board over ten years ago have completely refuted the idea which originated in Germany, and which was widely accepted when those observations were made, that these bacilli are normal intestinal inhabitants. The extensive work carried out since in this country, America and Germany has fully confirmed these investigations.

In connection with the question of the secondary infection of food the importance of rats and mice must not be overlooked, since these animals frequently are infected with Gaertner group bacilli, and such infected animals, or those who have recovered and still harbour the bacilli, may act as a vehicle of infection.

It is therefore possible to have clear ideas as to the extent to which the domestic animals used for food may serve as a cause of food-poisoning outbreaks, and the lines along which we must institute our nquiries when they occur.

Diphtheria and Cats.

That cats may be attacked with human diphtheria, or act as carriers of the bacilli, and so spread this disease, is a view very widely accepted amongst medical men and in the text books.

Time will not allow me to discuss the experimental and other grounds for this view, and I must refer inquirers to my paper, published last February in the *Journal of Hygiene*, which deals with this and with my experimental work. This view has been kept warm, and received considerable support from the reports published by Medical Officers of Health and others as to the finding of diphtheria bacilli in the throats of cats associated with cases of human disease.

My investigations were along three lines. The examination of the throats of healthy cats and kittens quite unassociated with cases of human disease showed that in the swabs from the latter no organisms like diphtheria bacilli were detectable, but that from no less than five out of eight healthy cats bacilli were found growing on the cultivation media, which, morphologically, very closely resembled diphtheria bacilli, and which could not be distinguished from that organism in the films from the cultures. One cat re-examined three months later still showed these organisms. When they were isolated and their characters studied in pure culture, it was manifest that they were *not* true diphtheria bacilli, nor were those tested pathogenic.

All the cases mentioned above, where diphtheria bacilli were reported as found in the throats of cats associated with human disease, rested upon morphological appearances alone and never upon isolation and identification, and, therefore, are completely valueless in view of the above findings.

My second line of enquiry was the examination of cats actually closely associated with human cases of diphtheria, and here, in several instances, as might be anticipated from my findings in healthy cats, bacilli morphologically indistinguishable from diphtheria bacilli were found in the cultures from the swabs. When isolated and fully investigated, however, none were found to be true diphtheria bacilli.

The third line of investigation involved the experimental inoculation of kittens, to see if it was possible to infect them with diphtheria bacilli by natural channels. As many as 19 different experiments were carried out, and 10 different strains of human diphtheria bacilli were used, the virulence of 4 of them being fully tested.

Massive and repeated feeding with highly virulent cultures (in one case on 11 occasions) were quite without effect. Kittens whose throats were inoculated by swabs with enormous numbers of diphtheria bacilli, either alone or mixed with staphylococci and streptococci, grown direct from human cases of diphtheria, remained unaffected, and the bacilli had disappeared within 24 hours. The possibility that the failure to infect the kittens was due to the absence of a local nidus of growth was met by creating such a nidus by a preliminary scarification of the throat, and with other animals by painting with strong silver nitrate solution. Subsequent massive inoculation with diphtheria bacilli still failed to produce any infection or, what was remarkable, any persistence of the bacilli locally. The same striking fact was brought out by a series of nose-swabbings with heavy doses of diphtheria bacilli. In every instance the bacilli rapidly disappeared, and neither local nor constitutional symptoms resulted. These results were exceptionally uniform and concordant. It was found impossible either to infect the kittens or produce a carrier condition, even one of very short duration.

The whole series of experiments justify the opinion that the common and widely accepted view that cats can suffer from a naturally acquired disease caused by the diphtheria bacillus is entirely without foundation. The reported cases of such an association are based upon insufficient examination and differentiation of the bacilli found, due to a failure to realise that a large proportion of healthy, normal cats contain in their throats bacilli which closely resemble, and are difficult to distinguish from, the true *B. diphtheriæ*.

The above selected examples only illustrate a small part of the possible interrelationship of human and animal infectious diseases.

I am convinced we do not utilise a great deal of available information which would be most helpful to both professions by our failure to secure extended co-operation between the medical and the veterinary professions. We live and work far too much in watertight compartments.

Medical men are liable to draw hasty conclusions as to diseases in animals and their association with human diseases, which may be very incorrect, because they are imperfectly acquainted with the diseases of animals and the bacteriology of healthy animals.

The veterinary profession fail to utilise as much as they might the detailed investigations of medical men upon human diseases, which would often throw light upon animal diseases, while I have the impression that they do not sufficiently consider animal diseases from the point of view of their possible relationship to human diseases.

Certainly, it is undeniable that if both combined together more than they do we should materially improve our knowledge of the relationship between human and animal diseases.—*Journal of the Royal Sanitary Institute, March,* 1921.

Clinical.

SUGGESTIONS FOR THE USING OF THE READING BACILLUS IN THE TREATMENT OF WOUNDS.

By J. D. WHITEHEAD, F.R.C.V.S., D.V.S.M.
Health Dept., Salford.

The Reading Bacillus may be used with advantage in all conditions of wounds, including Quittors, after operation.

The following points are suggested :—

1. The wound should be laid open to its extreme depth and drainage established; all foreign bodies removed.
2. Wash with saline solution, pack with ordinary salt, and leave undisturbed for two days.
3. At the end of the second day remove all dressings and irrigate well with hypertonic saline solution.
4. Sow the Reading bacillus in cultures freely, using an ordinary hypodermic syringe and taking care to introduce it into every part of the wound.
5. Apply a thin layer of sterile cotton wool over the surface of the wound, packing it in tightly, to absorb the culture lying in the wound. Use more of the culture to thoroughly soak the cotton wool.

6. Insert salt packs, moistened with water, and pack in very tightly. These will soon assume the shape of the wound.
7. Lay some cotton wool over the packs and squeeze the whole in tightly.
8. Sutures, bandages, etc., may be applied to keep the packings *in situ.*
9. Leave undisturbed for five or six days. If the top layer of cotton wool becomes displaced, renew it, and no harm will be done.
10. On the fifth or sixth day remove all the dressings and packings and irrigate thoroughly with saline solution. All dead tissue will come away during the irrigation, or can easily be removed with forceps.
11. It is suggested that subsequent treatment be as simple as possible.

Keep cultures in cool, dark place until required for use.

EXPERIMENTS IN THE READING BACILLUS TREATMENT OF WOUNDS.

Experiments in the treatment of wounds in horses and mules by means of the " Reading Bacillus " may be classified into two series :—

1ST SERIES.

These consisted of six cases, but owing to faulty methods of packing, practically no information could be gathered as to the value of the treatment.

The method of packing adopted was to sow the organism as instructed in the circular letter, and to pack the cavity of the wound with salt packs.

These packs were made by wrapping salt in sterilised gauze, and suturing the wound with ordinary tape sutures.

The results, however, were unsatisfactory, because it was found that in the course of a few days (two or three) the pack became loose owing to the shrinking of the salt packs, due to the melting of the salt. Furthermore, the sutures slackened owing to necrosis of the skin—due to the tension on the skin.

Thus the whole of the packing tended to " sag " or drop down, and anærobic conditions favourable to the growth of the organism were not obtained.

Case 1.—No. B3A/9045, L.D. Grey Gelding. This animal had a wound 12 inches by 4 inches on the near side of the neck, with no tendency to heal. The cavity was packed on 10/7/18, but the packing came away the following day, therefore quite unsuccessful.

Case 2.—No. B3A/1838, R. Bay Gelding. Large abscess cavities were on both sides of the neck, 9 inches long on the off side, and on the near side there were two openings, each 6 inches long. They were

inoculated with " Reading Bacillus " and packed with salt packs on 10/7/18. They were unpacked on the 15/7/18. Necrotic tissue came away. On 22/7/18 it was observed that from the top wound on the off side there was no discharge. From the bottom wound there was a slight creamy froth, and from the near wound there was a slight creamy froth due to continuous movement. This case was a most indefinite one, and did not progress. On the 21/9/18 the animal was destroyed for meat.

Case 3.—No. B3A/1814, L.D. Bay Gelding. This animal had a vertical wound on the off side, behind the scapula, 1 ft. in length, and also a large abscess cavity in off axilla. On the 10/7/18 the cavity was packed, and on the 14/8/18 the vertical wound was unpacked. On the 15/8/18 the axilla abscess cavity was also unpacked. On the 22/8/18 it was noticed that there was no discharge from the scapula wound, but from the axilla wound there was a slight creamy pus. The necrotic tissue was coming out gradually, whilst the remainder of the wound was healthy. Unfortunately the original operation on this case was not successful, as at a later date shrapnél was discovered at the upper end of the vertical wound and posterior to it. The wounds treated did well, but issue was delayed by the failure to locate shrapnel at original operation. The animal was issued on the 24/9/18.

Case 4.—No. B3A/839, Mule, Brown Gelding. Six years. Two wounds on the withers from sinuses laid open. Packed on the 10/7/18. The packing broke away on the 14/7/18. These wounds did well, but a further sinus developed later and the animal was slaughtered for P.O.W. on the 7/10/18. Post-mortem examination showed disease of the cartilage of prolongation of the scapula.

Case 5.—No. B3A/3119, L.D. Bay Gelding. Fistula withers. This animal had an opening 12 inches long on the near side. On the 21/7/18 the cavity was packed, but on the 23/7/18 the packing came away. On the 25th the wound was irrigated with saline solution. In the lower part of the wound healthy granulations were to be observed. The animal is still under treatment owing to development of fistula on the off side.

Case 6.—No. B3A/1801, H.D. Black Mare. Tumour near shoulder. This animal had an opening 15 inches along the course of the jugular near the collar seat. On the 17/7/18 the cavity was packed with salt packs. On the 22/7/18 there was a slimy discharge, and on the 23/7/18 the cavity was irrigated with saline solution. The wound was healthy, although pieces of yellow gelatinous material were on the wound. Owing to the position of the tumour it was not possible to remove all the fibrous tissue at the operation, and the wound was

one which would have taken a long time to heal by the ordinary method. From the date of unpacking there was never any pus. The wound healed up in a surprising manner, considering its extent and its appearance at the termination of the operation. On the 24/8/18 the animal tore open the wound on a manger, but otherwise practically healed. On the 23/9/18 the animal was issued to remounts.

Case 7.—No. B3A/1813, L.D. Grey Gelding. This animal had a gunshot wound on the off shoulder behind the scapula. There was a frothy, stinking discharge, and very unhealthy granulations. There was also a great amount of movement of the injured muscles in this region. On the 20/7/19 the cavity was inoculated with "Reading Bacillus" and packed with salt packs. On the 23/7/18 the packing came away, and by the 25/7/18, after the cavity had been irrigated with saline solution, healthy granulations were present. On the 30/8/18 the wound was quite healed, and the animal was issued on the 26/9/18 to remounts.

2ND SERIES.

In these cases a different method of packing was adopted. After sowing the organism the cavity of the wound was packed with salt packs made in the following manner:—Thin layers of cotton wool were soaked in a saturated solution of salt. Then about a tablespoonful of salt was rolled up in these thin layers, and they were squeezed as tightly as possible so as to dry them. The wound was then tightly packed with these layers and a roll of dry cotton wool was placed over the opening.

The method of suturing adopted was a form of "quill suturing." Pieces of green willow or cane (cut to length of the wound) and ordinary waxed thread from the saddler's shop were employed. A double length of this material was used, and tied round the willow stick at one side of the wound. It was then pulled tightly to keep the packing in position and tied across the willow on the other side of the wound. This method has been found quite satisfactory and keeps the packing in position. It also has the additional advantage that it does not cause sloughing of the skin, nor does it cause inversion of the skin at the edges of the wound.

After packing an ordinary bandage was applied over the whole in the form of a figure eight, to keep it in position and to add to the cleanly appearance of the dressing.

Cases in Rotation.—The cases enumerated here have done well with one exception (B3A/1360). From the date of unpacking these cases have steadily progressed. There has been no discharge of true pus, such as is described in all text books as "Laudable Pus," and the granulation tissue was firm and healthy. A wound after unpacking

presents in a couple of days the appearance throughout its entire surface of healthy granulation tissue.

The " Reading Bacillus " has, I consider, undoubtedly the power of removing dead tissue rapidly, and because of this nothing is left on which ordinary pus-forming organisms can grow (for further reference on this particular point see " Import of Dead Tissue in Wounds," in the *Veterinary Record* of September, 1917).

It must be also noticed that the wounds on which these experiments were conducted were on the body, and were not progressing satisfactorily under ordinary treatment.

The methods described with regard to the use of the " Reading Bacillus " in the letter from No. 2 Veterinary Hospital were not followed implicitly. Wounds were not packed with salt packs immediately after operation for the following reason:—Because it was considered that a suturing of the skin on two occasions was likely to cause its destruction and delay healing.

It is, of course, hardly possible to say how much time is saved by this method of treatment, but at the present moment an animal with shrapnel wounds in both hind quarters is being treated by ordinary methods, and a comparison can be made at a later date.

Near quarter similar to B3A/1796.

Off quarter similar to B3A/1803.

The cases which have proved the most remarkable amongst those treated are B3A/1801 (of 1st Series) and B3A/697 (of 2nd Series).

Case 1.—No. B3A /1803, L.D. Bay Gelding. This animal was admitted to hospital with a gunshot wound off quarter. This wound cavity was 8 inches deep and 8 inches long. On the 24/8/18 shrapnel was removed from the wound, and on the same day salt packings were introduced. On the 27/8/18 the packs were removed. There was remaining a large quantity of necrotic green tissue in a bad state. On the 27/8/18 the wound was packed with one tube of " Reading Bacillus." On the 2/9/18 it was unpacked, and the wound contained bright and healthy granulations. On the 6/9/18 there was a very small, slimy, serous discharge. On the 24/10/18 the animal was issued to remounts.

Case 2.—No. B3A/3044, L.D. Bay Mare. Wound punctured, bomb, near hip. On the 27/8/18 this animal was admitted to this Ward, having been treated previously by ordinary methods. The wound had not shown any tendency to heal. On the 2/9/18 the wound was opened out and drainage obtained. The fibrous tissue lining was removed. On 5/9/18 it was packed with " Reading Bacillus," and on 10/9/18 it was unpacked and irrigated with saline solution. The animal is still in hospital, and is preparing for issue.

Case 3.—No. B3A/3498. R. Brown Gelding. Gunshot wound near quarter. This wound cavity was fully 9 inches long and 8 inches deep, and there was quite a quantity of necrotic green tissue. On 2/9/18 the wound was opened out, and packed with " Reading Bacillus " on 5/9/18. It was unpacked on 10/9/18 and irrigated with saline solution. The wound contained bright and healthy granulations, and healing has progressed very rapidly. The animal is still in hospital and doing extremely well.

Case 4.—No. B3A/1796, Rider Black Mare. Shell wound. From this wound there was a dirty chocolate discharge, which has an unhealthy and foul smell. The wound was 1 ft. in depth and 8 inches long. On 27/8/18 it was packed with " Reading Bacillus," two tubes. On 2/9/18 it was unpacked and the cavity was irrigated with a saline solution. The wound was very healthy in appearance, and no fibrous tissue was to be seen or felt. This case is now fit for issue to remounts and has progressed most favourably at a rapid rate.

Case 5.—No. B3A/697. Light Draught Bay Gelding. Wound off side sacrum. This wound was the size of a cocoanut, and the cavity penetrated downwards towards rectum. Drainage was impossible. It might also be added that this wound had been treated by ordinary methods prior to admittance to the Ward. On 7/9/18 the cavity was packed with two tubes of " Reading Bacillus." On the 10/9/18 it was unpacked and irrigated with a saline solution. The wound presented a very healthy appearance, and from the date of unpacking progressed steadily and rapidly. The animal is now preparing for issue.

Case 6.—No. B3A/8488, Bay Gelding H.D. This animal had a wound off quarter. This case was a very bad one, as a counter opening had to be made to the original pus-discharging opening in order to remove loose bone causing the discharge. A great amount of muscle was thus injured. On 10/9/18 the cavity was packed with " Reading Bacillus," and on 15/9/18 it was unpacked and irrigated with a saline solution. There was no pus discharge of any kind, and the wound was doing exceptionally well when the animal developed strangles and was transferred into another ward of the hospital.

SUMMARY.

" Reading Bacillus " undoubtedly has the power of causing the rapid sloughing of dead tissue.

On unpacking a wound this tissue comes away in large grey, dirty pieces (not unlike dirty lint), and in all cases where there were no pockets left for lodgement of pus there has never been any discharge of pus afterwards.

It must be borne in mind that the cases recorded above were practically all unsatisfactory cases prior to this treatment, thus testing its value severely.

As to the amount of time in hospital saved, this cannot, of course, be stated in days. It appears fairly obvious, however, that if after say seven days there is no further destruction of tissue in a wound, but only a steady progressive healing process taking place, such a case must necessarily be ready for issue much earlier than one where the wound is discharging pus for months. In addition there is no danger of pus burrowing and forming pockets beneath the skin or elsewhere, which, unfortunately, does happen even in wounds apparently well drained. It is my desire to continue with this treatment, and to employ it in cases which present greater chances of recovery than those enumerated above.

SOME NOTES ON LIVER-FLUKE DISEASE AS OBSERVED IN NORTHERN RHODESIA.

By H. E. HORNBY, M.R.C.V.S.

Northern Rhodesia and the adjoining countries experience a rainy season from November to April. The remaining six months are dry. During the season of drought the rivers dry up until at its end only the largest are flowing, and, away from them, men and animals obtain their water from isolated pools and springs.

Liver-fluke disease occurs throughout the whole country, and with increase in the cattle population its ravages become more evident. Long since, because of this disease and of the strongyloses common to both cattle and sheep, the latter animals have ceased to flourish in most stock-raising districts, and to-day the mortality among cattle from distomiasis is severe.

The causal agent is *Fasciola gigantea** (Cobbold), which differs from the common European fluke by its greater length, more elongated shape, and the closer proximity of the two suckers. The common intermediate host is a snail, which, somewhat arbitrarily, has been named *Limnæa natalensis*, but other water-snails may serve. Before I knew of the recent important researches in South Africa carried on independently by F. G. Cawston and A. Porter, I had determined that the water-snails in pools on heavily infected ranches harboured many cercariae, but before I had proved that these were larval forms of fasciola I came across the work referred to, and I was able to identify

* Spelt "*F. gigantica*" by some authors.

the snail parasites as *Cercaria pigmentosa* (Cawston), which Porter has proved to be the larva of F. gigantea.

In December, 1919, I placed ten adult specimens of *Limnæa natalensis* in as many test tubes containing clean water, and within a few hours three of these were surrounded by many cercariæ just visible to the naked eye. Under the microscope the presence of two suckers, a bifurcated intestine and a number of granules can be demonstrated easily. Although they lash their tails freely, movement is effected by lengthening and contracting the body (euglenoid movement). After about 24 hours of free-swimming life each cercaria casts its tail and encysts. In nature, before doing this, the parasites are said to leave the water by creeping up the stems of plants; in a test tube most of them encyst on the glass well below the surface of the water. Such cysts are very tenacious of life.

Another common water-snail in South and South-Central Africa is *Physopsis africana*, and on one occasion I found a specimen of this species heavily infected with *Cercaria pigmentosa*.

It is extraordinary how a snail can harbour hundreds of cercariæ and rediæ and yet appear to be in normal health.

Water-snails can be found in large numbers throughout the whole of the rainy season. During the dry months, especially June, July and August, when the weather is cold, they are not found so readily. Last year during those winter months I travelled some hundreds of miles by canoe, and casual observation failed to reveal any water-snails at all; presumably during the cold weather they lie at the bottom of the water. Nevertheless, I have found them during all months of the year, but the rule is as stated.

The environment most favourable to the development of water-snails is clear water without much flow, an abundance of water-plants and a firm gravel or clay pool-bottom. They have difficulty in surviving in swiftly flowing water, in pools the surface of which is covered by scum, in water overlying soft mud, and in the acid water of "sour oleis." Thus they flourish best in exactly that kind of water which forms the apparently ideal drinking-place for cattle, the backwaters of the great rivers, and the shady, grass-fringed pools of the "sweet oleis." In such places, during the warm months, snails can be found in abundance, clinging to water-plants, or walking on the under-surface of the water, feeding on protistæ as they proceed. Physa, at any rate, appears to be unisexual, because pairs of this snail are frequently seen floating together. Eggs are laid in packets of about 25 (Physa). I don't know how long they take to incubate, but presumably only a few days under the most favourable

conditions. Growth of young snails is rapid, and full size appears to be often reached within a month of hatching. Neither snails nor eggs appear to be resistant to desiccation, and I believe that any pool which becomes thoroughly dry, so that no mud at all is left, has to be restocked afresh each year. This restocking is effected by the floods, which link up all the pools in a valley or on a plain. At any rate, a month after the commencement of the heavy rains, pools which before then were quite dry and their exposed bottoms covered with empty snail-shells, now contain numerous water-snails, in all stages of development. Water-snails appear to be of about the same density as water ; sometimes a little less, when they float ; sometimes a little more, in which case they sink if detached from water plants. Occasionally a floating snail may be observed to liberate a bubble of gas which so alters its specific gravity that it immediately sinks.

These scattered observations of snails were made with a view to determining how liver-fluke disease could be combated.

Some ranches depend for their water during the dry season on pools, or on small rapid streams which spring out of the hills to run a few miles and then disappear. On such places liver-fluke disease can be controlled. One should avoid the low-lying pastures during the rainy season, using them only after the floods have gone. The best drinking place for cattle is furnished by a swiftly-flowing small stream which has sandy banks devoid of vegetation. The worst is a still, clear, reed-surrounded pool with a firm bottom, where cattle are tempted to linger and pluck at the grass which grows so luxuriantly on the banks of and within the pool itself. Better than such a sylvan spot is the foul mere, the banks and the very water of which have been churned into plantless mud by thirsty cattle and on the soft bed of which no snail could support existence. At the very end of the dry season, too, on a farm or ranch with a limited water supply, a determined effort can be made to reduce the snail population by digging over and burning the surface of all dried pools and by clearing the existing ones of as much herbage as possible.

Unfortunately the best ranches of Northern Rhodesia lie along the banks of the great swampy rivers, the plains on each side of which are deep under water during the rains, but gradually dry up later, furnishing, as the water recedes, abundance of excellent grass during the whole season of drought. The great value of these ranches lies in the quality of this excellent winter food, and I do not know of any way of ridding them of water-snails. There are hundreds of thousands of acres of magnificent grazing along the banks of the great rivers which are spoilt by the presence of flukes.

The effect of flukes on cattle is most marked in cows and yearlings; in fact the presence of the disease is indicated by a general unthriftiness of the cows and yearlings of a herd at a time when the oxen and heifers are in good condition. A fluke-infested cow falls away to a shadow after parturition, producing milk for her calf at the expense of her own tissues. Young stock vary much in the extent to which they show signs of infection, but an affected herd shows too large a proportion of "weeds," and its general condition is unsatisfactory. Adult oxen are marvellous in the way they can retain their condition when their livers are full of flukes, but even their resistance has a limit.

Most of the symptoms of fluke-disease in cattle are those of malnutrition. When the liver's functions are deranged, fats are ill-digested, proteins are not deaminated, glycogen is not stored up, and so an affected animal can only keep in good condition by ingesting an excess of nutrient material. In addition, in very advanced cases, one recognises symptoms of anæmia due to the blood-sucking habits of the parasites and to the hæmoclastic properties of toxins normally intercepted by the liver. Jaundice, dropsy and diarrhœa may also be observed. Very many animals die from the disease.

It is now generally recognised that flukes reach the liver via the peritoneal cavity, and that, very rarely, the passage of numerous young flukes at the same time may cause acute peritonitis and hepatitis. While such a condition may be met with in sheep, it is very rare in cattle, no doubt on account of the greater size of the bovine organs; in fact, the greater severity of both distomiasis and strongylosis in sheep can be accounted for an anatomical grounds.

Diagnosis of the disease among a herd is made easy by post-mortem examination of any member. It is unnecessary to try and develop a complement test. Microscopical examination of fæces for eggs will reveal very few, even when a beast is heavily infested, it being remembered that the fluke population of a liver is very small compared with the strongyle population of a heavily infested abomasum, and that the larger eggs are correspondingly more difficult to find in a great mass of dung.

Medicinal treatment of infested herds does not hold out much promise of success. Male-fern is too expensive, and in my hands kamala has not yet given good results. The method of using the latter drug has been to give an ounce on the back of the tongue on two successive evenings. I have not been able myself to watch the effects of this dosing on the parasites and their unfortunate hosts, but my late stock-officer entrusted to watch results has written to say that no benefit has been observed, but that he will give the drug a further trial

A CASE OF MILK FEVER.

By A COUNTRY PRACTITIONER.

In the forenoon of February 2 last I was called to see a cow which had gone down after calving. Being away from home I did not get to see her until about 7 p.m., when I found her bright and cheerful, eating well and chewing her cud, but unable to rise. The pulse, temperature and breathing were normal. The bowels natural, and she passed urine whilst I was there, without the aid of the catheter. The udder was red and active, and the teats lively and full of milk. Milk secretion very little, if any, suspended. Her skin was cold.

I diagnosed it as an ordinary case of "Dropping after Calving," gave a dose of Tr. Aconite, and left a cleansing drink, rubbing her back with liniment and rugging her up.

I saw her again the following afternoon about 4 o'clock, and found her still bright, eating and chewing the cud, and milk coming as usual. About 7 o'clock the same night I got a message saying that the cow was violent, throwing herself about and apparently in great pain. Not being convenient to see her that night, I sent a draught containing:

Chloral hydrate.
Pot. brom. āā 6 drs.
Aqua ad 6 ozs.

To be given in 1 pint water.

On my visit next morning I found her deeply comatose, the udder empty, teats white and shrivelled, and secretion of milk gone. The eyeballs fiery red and injected. Prognosis unfavourable. I now pumped air into the udder and tied the teats, ordering it to be left in for eight hours.

On my visit the following day I found her slightly better, but still partly comatose, and a little milk in the udder. I now gave her powders of ammon. carb. and foenugrek.

The next day she was decidedly better. Coma had passed away, milk coming more freely, appetite increasing, but not chewing the cud. A mixture of nux vomica and ammon. aromat was left.

The next day she was up and doing well, and made an uneventful recovery, except that most of the skin peeled off one side of the ribs and partly off one leg.

During my experience of milk fever I have never had a case in which coma has been delayed so long. I have had one or two in which it has come on a few hours (about eight) after dropping. This case would be about thirty hours after dropping before any symptom of milk fever came on. Thinking that this was unusual is my reason for sending it to the JOURNAL.

TWO INTERESTING CASES OF FOREIGN BODIES IN CANINE PRACTICE.

By H. C. P. KING, M.R.C.V.S.,
Kennington Cross, London, S.E.

Case 1.—White Pomeranian, male, four months old. This animal was in considerable pain, and screamed when the abdomen was pressed upon. There were frequent attempts at vomition, and the dog preferred to lie with its head and neck extended and resting on a cushion. Temperature normal. This condition had been in existençe two days prior to my seeing it, and the owner had given it some castor oil, without any improvement.

Diagnosis.—Probably a foreign body. Digital examination per rectum revealed nothing actually in the rectum itself, but through its wall and on the left hand side could be felt a hard blunt point resembling a piece of wood.

Treatment.—Decided to perform an exploratory laparotomy. Administered ¾ gr. morphine hypodermically completing the anaesthesia by means of chloroform. An incision was made directly to the left of the median line in front of the penis. On exploring the abdomen with the fingers a foreign body could be felt in the bowel, which, on being brought as near as possible to the primary incision, was opened by making an incision about ¼ inch long. Through this opening was withdrawn a lady's hatpin seven inches long, and minus the knob. Three silk sutures were inserted in the bowel and the wound was painted with Tr. Iodi 2½%. The abdominal wall was sutured in two layers, the wound dressed with Tr. Iodi, and sealed with collodion, and a pad of cotton wool was kept in position by a bandage. About the third day there was a little suppuration from the front end of the wound, probably owing to contamination by urine. This necessitated removal of two or three of the outer sutures. After-treatment simply consisted in the application of Eusol and dry dressing. The dog was fed only on milk and Brand's essence of beef in very small quantities. The wound healed perfectly, and the animal was discharged from hospital in fourteen days.

Case 2.—Pomeranian, male, about eight weeks old. This dog stood with its back arched and evinced considerable pain on being lifted up. The abdomen was tense and distended. The dog refused solid food in the form of bread and milk, but could swallow milk alone fairly well. It would be quite quiet for a few minutes, and then suddenly emit a painful yelp.

Diagnosis.—The presence of some foreign body was suspected. The mouth, pharyngeal and cervical regions and the rectum were

examined, but nothing abnormal found. X-ray examination revealed a foreign body in the thoracic portion of the oesophagus.

Treatment.—The probang was gently passed, but failed to dislodge the obstruction. Petroleum emulsion and chlorodyne were given three times daily to allay the pain and in the hope that after repeated lubrication, of the oesophagus, the foreign body might descend into the stomach. The animal took milk quite readily. After three days and no improvement, we tried the dog with bread and milk, which, as expected, he readily devoured, though swallowing was difficult. So we finally decided to let him have as much as he would take and then administer an emetic in the hope that its sudden expulsion might by chance dislodge the obstruction. This, as luck would have it, it actually did. There was just a suspicion of blood on the piece of bone which was the cause of the trouble. As the dog was now quite lively, and was taking milk and Brand's essence readily, it was returned home two days later. Unfortunately, its owner, in spite of our instructions to the contrary, allowed it to partake of a considerable amount of meat in big pieces, and the animal died suddenly the next day. Post-mortem revealed the stomach full of congealed blood, pieces of meat, and the remains of a match-box with which the dog had been playing. The oesophagus was ruptured, but the thoracic cavity was free from blood.

POISONING OF SHEEP BY SODA.

By H. A. REID, F.R.C.V.S.,
Veterinary Laboratory, Department of Agriculture, New Zealand.

I HAVE recently had brought to my notice a heavy mortality occurring among a mob of sheep, the cause of which has been determined by analysis to be the result of absorption of sodium salts.

The history of the cases is as follows :—

A line of sheep purchased for slaughter by one of the meat export companies left the homestead in perfect health and condition, and were travelled by road to be entrained at the nearest railway station—a distance of about thirty miles.

The journey by road occupied three days, and was undertaken during exceptionally hot, dry weather. The sheep were duly trucked, and appeared at the time none the worse for having been driven under these conditions.

The journey by rail to their ultimate destination occupied four days. Soon after their arrival at the works some of the sheep com-

menced to die. They were removed from the works and depastured not far away. The mortality continued, until, out of the original mob of 775 sheep, 150 had died.

The only symptoms noticed were a staggering gait and hurried respirations. Subjects showing these symptoms lay down and shortly afterwards expired.

Two full-mouthed Lincoln wethers were brought to me in a motor lorry for examination. Both animals were dead, though one had been loaded while alive and had died *en route* within an hour of starting. Post-mortem examination disclosed congestion of the subcutaneous veins, the blood having clotted imperfectly.

On opening the abdominal cavity the small intestines were seen to be congested and studded on their serous surface with hæmorrhagic patches (*ecchymoses*).

The gall bladder of one of the sheep was greatly distended with dark green bile. Some occlusion of the bile ducts seemed to have occurred, for the surrounding liver tissue was deeply bile stained, and the bile ducts were distended to the thickness of a pencil. Bile staining was also present in the omental fat. The liver appeared to be slightly congested, but firm in texture. The abomasum presented a striking appearance, much more marked in one of the sheep than the other.

In the more acute case the abomasum was filled with dark, blood-stained fluid contents. The mucous lining was intensely congested and hæmorrhagic over almost the entire surface, reminding one of the appearance commonly seen in cases of cattle plague. In the other cases the congestion was well marked, though not so diffused.

Lesions in the bowels coincided with those seen in the fourth stomach, the degree of congestion diminishing gradually as the bowel was traced back from the duodenum.

The kidneys appeared to be slightly congested. The spleen was normal in size and consistence.

The heart and lungs showed no abnormality beyond hypostatic congestion of the latter, and venous engorgement, which one would expect to find in a dead animal.

A moderate proportion of nematode worms were present in the abomasum. The blood appeared to be sterile on microscopic examination and otherwise normal.

Sections of the liver and kidneys examined microscopically showed no notable changes beyond slight venous congestion of the former.

The intense gastro-enteritis led me to conclude that some form of irritant poison was accountable for the post-mortem appearances described. I accordingly forwarded the stomach contents, and also

the liver, kidneys and spleen to the Government analytical chemist for further investigation.

In due course the analyst reported that no poison could be isolated from the latter organs, but that the contents of the stomach gave a strongly alkaline reaction, with effervescence on the addition of acid. On evaporating some of the fluid contents of the fourth stomach to dryness numerous crystals of sodium carbonate were recovered. The ingestion of this substance had undoubtedly provoked the mortality.

The question as to whence the poison was derived is interesting and open to speculation. In view of former similar experience with pigs one is led to assume that the sheep may have had access to the effluent from one or other of the dairy factories along the road on the way to the railway station. These factories employ quantities of soda solution for cleaning purposes. Sometimes proprietary " cleansers " are used, of which the basis is commonly sodium carbonate or sodium hydrate. Sodium salts are also used to neutralise the lactic acid of the milk or cream, as the case may be.

The effluent of the " washings down " is, in some cases, allowed to flow into channels contiguous to the roadway. As it is impossible to discover any other source, it seems reasonable to suppose that the sheep, parched with thirst through being driven on the hot, dusty road, partook of water containing the soda solution in this way. The varying degrees of inflammation present in individual sheep may be accounted for by the act of drinking having been accomplished hastily in some cases and with more leisure in others.

The length of time, five to six days, between the probable intake of the poison and death is in accordance with a commonly observed fact regarding poisoning by alkalies. In the human subject, according to Taylor,* three hours is the most rapidly fatal case recorded, while others take from six weeks to two months before fatal results ensue.

The effects of the soda seem to be confined to the upper portions of the alimentary tract, acting as a topical irritant to the mucous surfaces of the abomasum and small intestines, while the organs of neutralisation and excretion, such as the liver and kidneys, appear to have received little or no damage.

The symptoms noted—staggering gait and hurried respirations—in the more rapidly fatal cases may depend, to some extent, upon the absorption of toxins through the damaged mucous surfaces, while in more prolonged cases death from cachexia, through malnutrition following the chronic inflammatory process, may determine the final issue.

* Taylor on Poisons.

THE RESULT OF A WORM DOSE.

By WALTER GREY, M.R.C.V.S.,
Ilford.

VERMIFUGES of the present day are much more satisfactory, both in the manner in which they are dispensed and the certainty of their action, than they used to be, but it is by no means on every occasion that one gets a result such as the under-mentioned. The patient was a whippet, two years old, to which, on April 15, 1920, after the usual 24 hours' fasting, I had administered 30 minims of Taenaline. Seventeen minutes later the animal passed a huge bunch of tapeworms, from which I teased out and counted no less than 69 complete parasites, all Taenia Marginata. I think that this almost marks a record.

Translations.

RINDERPEST IN BELGIUM.

RINDERPEST, which has not appeared in West Europe since 1870, was reported in Belgium at the beginning of August. Zebus imported from British India and Rio de Janiero, which were landed at Antwerp, introduced the disease; cattle from North America sent to Belgium to aid in restocking the country became infected and spread the disease; 384 animals died of the disease and 326 were destroyed. On August 6 there were forty centres of infection. Strict sanitary measures were at once adopted by the Belgian Government, serum was obtained from Egypt, and plans instituted for a home production of the matter at Brussels. On August 15 a total of 58 communes and 130 holdings were affected, with 1,068 bovines dead or killed. Great precautions was taken on the French frontiers to prevent admission of the disease into the country. These were so successful that only one case, near Lille, was discovered.

In October only four centres of infection existed in Belgium, and inoculation work proved very successful. Many countries, including the Netherlands, Denmark, Italy, Spain and Servia, sent representatives to study the preventive operations.

On October 18 the severe measures in France were abated. Circulation of animals was permitted in the frontier communes, as well as the traffic in solipeds in the neighbouring Belgian communes. Animals for slaughter were permitted to travel to the public abattoirs of the frontier districts.

In the frontier districts, and in that of Bethune, measures are limited to the confinement of all ruminants. The forbidding of

hunting, which raised violent protests, is lifted, except in the frontier communes.

It is henceforth more than probable that the plague will be limited to Belgium and that France will be preserved. In any case, the provision of serum provided will limit the losses and prevent extension of the first centres.

The Belgian sanitary services from the first have shown an optimism which events have justified.

The sanitary system applied has consisted in vigorous isolation of contaminated holdings, with slaughter of the whole of the ailing and in-contact animals; burying with superficial disinfection of the ailing and infected ones showing hyperthermia; sending to the refrigerator and for use as food contaminated animals without a temperature; complete disinfection of the locale.

Observations gathered show that, on the one hand, the spread of new centres of disease has been brought about in almost all cases by accidentally or fraudlently infected animals; in a few cases only by the transport of fresh meat.

On the other hand, one finds no mention of very indirect processes of spread named in all the classics. Intermediary life, man, refractory animals play only an insignificant or nil role. Precise observations show that flies do not carry the virus.

To what ought the relative mildness of the plague in Belgium to be attributed? A first hypothesis comes to mind. The virus introduced, issue of the zebu, an animal normally very resistant, was attenuated and little active. This idea appears controverted by two reasons. In the first place successive accidental passages in contaminated animals have not brought about aggravation in the epidemic type. On the contrary the march of the plague has uniformly relaxed. Secondly, it was found that experimental inoculations of virus obtained from the first sick animals caused rapidly fatal results with the minima of classical delays.

It seems to us that rinderpest is not to be feared as it has been.

One can understand the rapid spread of the plague in countries submitted to enemy invasion, where the disease is spread by animals not under control. One can also explain the invading advance of the plague in countries where sanitary rules are difficult of application or impossible. The permanence of the plague in the East, in Egypt, and in India, the epizootics of the continent of Africa are easily explained.

On the contrary, rinderpest is effectively combated in nations possessing a sufficient sanitary organisation. The epizootic of 1865 was stamped out without too much difficulty in the North of France

by well planned intervention carried out by improvised means. Its extension into England may perhaps be traced to absence of any co-ordinating sanitary service.

The data gathered in 1920 are reassuring. They show the excellence of classic methods in a country possessing a veterinary organisation. It is certain that the terror that contagious typhus of bovines, the dreaded plague, inspires is a powerful factor of success against it. Thanks to it severe repressive measures can be carried out without protestations and applied without too much resistance. The fear of contagion is such that one obtains the collaboration of all interested, which constitutes the necessary condition of all effective intervention. —*Revue Général de Médécine Vetérinaire.*

G. M.

SALICYLATE OF SODA HYPODERMICALLY IN THE TREATMENT OF INFECTIOUS ARTICULAR RHEUMATISM OF THE PIG.

By H. STALDER, V.S.,
(*Cossonay*).

M. Lhoste has described in *La Presse Medicale* his treatment of rheumatism in the horse and cow by subcutaneous injections of salicylate of soda. The article encouraged me to try this treatment in infectious articular rheumatism of the pig. The results were astonishing, corroborating the reputation of salicylate of soda as a specific.

Case 1.—A pig, 3 months' old, suddenly affected with acute articular rheumatism, so that it was impossible for him to keep up. Appetite almost nil. Kept alive by taking a little liquid nourishment. Remained constantly recumbent. The least movement caused him to cry out with pain. The two hocks were enlarged, hot and painful to the touch.

Treatment.—Friction of the limbs with essence of turpentine and subcutaneous injection in the abdominal region of 15 grains of salicylate of soda in 5½ drachms of water. 48 hours afterwards the pig got up; a second injection made it quite brisk and active.

Case II.—In a litter of pigs 4 months old three suddenly showed difficulty in walking; the most seriously affected one died. Autopsy confirmed the diagnosis of acute articular rheumatism; abundant synovia in the left hock and fibrinous lumps, large quantity of serocity in the pericardium, with fibrinous deposits; no other anatomical lesions. All received a subcutaneous injection of 15 grains of salicylate of soda in 5½ drachms of water; the worst affected one was put in a box by itself and received an injection of 30 grains of salicylate of soda

in 11 drachms of water. The limbs were rubbed with essence of turpentine. 24 hours after the least ill one ran into the field to his companions and the one that couldn't get on his feet came to the trough. A second injection cured him completely.

These results induce me to ask my confrères to repeat these trials on a larger scale.—*Swiss Veterinary Journal.*

G. M.

Abstracts.

SENECIO DISEASE.

WITH reference to the article on this subject in *The Lancet* of October 23 Professor Wyndham Dunstan, Director of the Imperial Institute, South Kensington, informs us that a full investigation of *Senecio latifolius* from South Africa was conducted some years ago at the Institute, when "Molteno" disease of cattle and horses was shown to be the result of poisoning by this plant. Professor Dunstan writes as follows:—

In the interesting article on Senecio Disease, by Dr. F. C. Willmot and Mr. G. W. Robertson, of South Africa, which appeared in your issue for October 23, reference is made to similar diseases in stock, occurring in several countries and caused by species of Senecio. In South Africa it was suspected that *S. latifolius* and *S. Burchellii* were the cause of a disease affecting cattle and horses, known there as Molteno disease, and in 1907 a supply of the former plant was forwarded to the Imperial Institute in order that this point might be investigated. A summary of the results obtained was published in the *Bulletin of the Imperial Institute* (1911, ix, 346).

A detailed chemical investigation of *S. latifolius* was made in the laboratories of the Imperial Institute by Dr. H. E. Watt, and the results were published in the *Transactions of the Chemical Society* (1909, xcv, 466). Specimens of the whole plant collected before flowering contained 1.20 per cent. of alkaloids, whilst specimens collected after flowering contained only 0.49 per cent. The total alkaloids were separated into their components, which proved to be two new alkaloids, and were named senecifoline and senecifolidine respectively. Both alkaloids crystallise well and yield crystalline salts. Pharmacological trials with senecifoline nitrate and senecifolidine nitrate were undertaken for the Imperial Institute by Dr. A. R. Cushny, F.R.S., of University College, London, who published a summary of his results in the *Proceedings of the Royal Society* (1911, B, lxxxiv, 188), and in the *Journal of Pharmacology and Experimental Therapeutics* (1911, ii, 531). Dr. Cushny, as a result of his experi-

ments, concluded that the symptoms and post-mortem findings in animals poisoned by the two alkaloids resemble so closely those induced in cattle and horses by *S. latifolius* in South Africa, that there can be no question that the Molteno disease is the result of poisoning by senecio alkaloids.

Senecio ilicifolius and *S. Burchellii*, which, owing to their presence in wheat crops, are believed to have caused the outbreak of senecio disease recorded by Willmot and Robertson, do not appear to have been examined chemically, but it seems highly probable that they contain alkaloids similar to, if not identical with, those of *S. latifolius*.

As stated by Willmot and Robertson, preventive measures against the disease, both in human beings and in stock, are essential. These will include the extermination of the suspected plants and the more thorough cleaning of the wheat. In Nova Scotia, where a similar disease, caused by *Senecio Jacobœa*, the common ragwort, has sometimes caused serious harm to stock, much attention has been given to the former point, and in 1911 an account of measures which have proved successful in Canada in eradicating ragwort was furnished to the South African authorities.

Professor Dunstan states that these measures consist, briefly, of adopting a shorter rotation of crops, more thorough cultivation, the use of weed-destroying implements, cutting the plant before the seed is formed, and, as sheep do not seem to be liable to the disease, grazing these animals on land infested with the plant.—*The Lancet.*

SUGAR USED IN TREATMENT OF EVERTED UTERUS.

EVERYONE has heard of sugar cured hams, but after reading Dr. G. W. Rader's article in the October issue, I have concluded that there are some who do not know of sugar cured uterai. My plan for treating eversion of the uterus is as follows :—

Wash off with quite warm water any filth that may be present. Then with clean hands raise the whole mass while an assistant places underneath a clean piece of cloth which has been covered with white granulated sugar. I then cover the uterus, being careful to fill each fold of the membrane. After a few minutes we see small streams of serum running off. At this point, knead and press between the hands, applying sugar to the parts that have been washed clean until the uterus becomes soft and small enough to be put back without much trouble. Be sure the parts are in proper position and keep them there by suture or otherwise. The sugar not only reduces the parts, but as

the serum passes out, it washes the uterus more thoroughly than can be done with a sponge. I suppose some will wish to know where I get the sugar.

Perrysburg, O. LOUIS CHAPMAN.

—*Amer. Jrnl. Vet. Med.*

RECTAL ANÆSTHESIA.

ALOI (*Rif. Med.*, October 9, 1920) has anæsthetised dogs by giving rectal injections of ether and olive oil. As the result of his series of experiments, he says that the harmful effect of ether on the intestinal mucosa cannot be avoided. Superficial inflammation is set up, or a marked dryness of the mucosa, which may even crack and bleed, leading to tenesmus, bloody diarrhœa, and proctitis. These changes in the rectal mucosa are transitory when the narcosis is only short and the rectum well washed out afterwards. The epithelial layer is unchanged. In dogs, at any rate, it was very difficult to obtain deep narcosis of prolonged duration.—*British Med. Journal.*

PYOSEPTICÆMIA OF NEW BORN FOALS.

By PROFESSOR M. L. PANISSET.
Of the Lyons Veterinary School.

RESEARCHES in the etiology of arthritis ought to have, as a result, the setting up of a specific therapy founded on a consideration of the facts acquired with regard to the cause of the ailment. Authors have not failed in this respect. Some, considering that there is a connection between the state of the mother and the infection of the new born, have proposed a therapy derived from preventive substances developed in the blood of the dam; others have thought that the product in utero may be vaccinated by immunising the mother and prolonging the resistance thus conferred by treatment undertaken after birth. Some experimenters have limited themselves to treating the foals only as being affected.

A Swedish veterinarian, Forsell, conceived the idea of treating the arthritis of foals with the serum of the dam. This method is based on the assumption, defended by Schule, and supported by other experimenters, that there is a congenital origin of the infection. Forsell uses the serum of the mother at once as a preventive and curative. His plan has been investigated by Mann. Of 22 foals treated, 15 have been cured. As a preventive the serum has been used on 12 foals; one only became slightly ill and was rapidly cured. Mann used intravenous injections of 4 to 500 cubic centimetres of the serum. Karreng also obtained excellent results, and Sonnenberg says that

four foals have died out of 65 he has treated. Forsell's plan has been greatly welcomed by Swedish veterinarians. To overcome the undoubted difficulty of collecting 500 cubic centimetres of serum in practice, Forsell recommends the use of citrated blood. The product neither coagulated nor cooled, is injected into the vein after being filtered. The congenital origin of the arthritis of foals being more than improbable, it would seem that there is little chance that the serum of the mother will be endowed with specific properties.

Antistreptococcic serum is employed against the arthritis of foals since Ostertag stated that the streptococcus is the most common cause of the affection. Numerous experiments have shown the little value of this serotherapy, and the recent experiences of MacFadyean and Edwards give evidence in the same direction. Magnusson has not been content with utilising the serum, but has had recourse to sero-vaccination. The preventive value of this medicative was such that in 1916 hundreds of doses of sero-vaccine were distributed without it being known that a single foal treated preventatively died of streptococcic infection. The curative action of the process is less regularly favourable. A complete study of the etiology of arthritis has shown to Magnusson the many causes of the malady, and hence the author recommends the use of a mixture of antistreptococcic and anticoli bacillary serum associated with an antistreptococcic vaccine; the results are excellent; 500 foals have been protected without any failures. Magnusson considers, from his experiments, that foals which show grave arthritic lesions with fistulæ or numerous intra-muscular abscesses are not suitable subjects for treatment. Foals which are ill from birth ought to be submitted to antistreptococcic and anticolibacillary serum therapy or to anticolibacillary therapy only; the dose of the serum should be from 50 to 100 cubic centimetres. When foals become ill at the end of the first week use dose raised from 100 to 200 cubic centimetres of antistreptococcic serum only. In all cases the injections ought to be intravenous.

Preventive inoculation practised as we have indicated under the form of sero-vaccination gives good results, and ought to be used in all places where the appearance of arthritis is the rule. Whatever may be the efficacy of one or other of these methods, one has always to count on failures due to *bacterium viscosum equi* and other microbes than the colibacillus and streptococcus. The arguments furnished in favour of a relation between the infection of the mother and that of its product are without doubt only applicable to certain cases, and their recognition does not justify us in giving up a method of prevention

whose value has been established by a long and frequent experience. In all cases measures destined to prevent infection of the umbilical cord should never be omitted.—*Rev. Gen. de Med. Vet.*

G.M.

Reviews.

ANNUAL REPORT OF THE VETERINARY COLLEGE, CIVIL VETERINARY DEPARTMENT, PUNJAB, AND THE GOVERNMENT CATTLE FARM, HISSAR, FOR THE YEAR 1919-1920.

HIS HONOUR, the Lieut-Governor of the Punjab, in submitting a copy of the Report to the Supreme Government of India, pays a just and feeling tribute to the services rendered by the late Colonel Farmer, C.I.E., whose health broke down towards the close of the year under report. When he went on leave it was hoped that rest, if it did not restore his full energy, would at least prolong his life. But, alas! news came of his death, adding another brick to the foundation of the road over which is laid the great line on which runs the Political Engine of Great Britain. In Colonel Farmer the Government has lost a very capable officer, and the Department and the people of India a most sympathetic friend.

Lieut.-Colonel Walker took over charge of the post of Principal in July, 1919, from Colonel Pease, who thus terminated a connection with the College that extended over twenty-one years, during which great development and advance resulted from his ability and energy. Mr. Burke, I.S.O., Professor of Surgery, also retired with a meritorious record of thirty-seven years' service in the Veterinary Department.

Eighty-one new students were admitted to the College, against seventy-eight in the previous year. The Government of India has approved of the revised course of Studies, which demands better educational qualifications from the students who enter. The question of affiliation of the College to the Punjab University, and the question of a Veterinary Faculty is under the consideration of the Government.

There was a very high mortality from contagious diseases amongst cattle, rinderpest accounting for 42,155 deaths, against 20,842 in the previous year. This is attributed to a low vitality, consequent on shortage of fodder, which decreased the ability to resist disease. The number of deaths from foot and mouth disease was 2,592, against 536 in the previous year, and hæmorrhagic septicæmia was responsible for 6,319 deaths, against 5,349.

Vaccinations against hæmorrhagic septicæmia are increasing in popularity, but, owing to a shortage of serum, inoculation against rinderpest had to be restricted. The effect of this was serious, and it is noted that Government has urged that local officers will insist on prompt reports of the outbreak of disease.

Amongst equines, fifteen cases of glanders were dealt with in Gurdaspur district by the Civil Veterinary Department, and three cases in the Rawal Pindi District by the Royal Army Veterinary Department. Surra was prevalent in some of the districts, and the steps taken by the Department to combat this disease, in spite of the shortage of staff, are creditable.

There are now in the Punjab 131 Veterinary Dispensaries. These institutions are increasing in popularity, and there is room for many more. Private munificence should be forthcoming to supplement public expenditure in this direction. There should be no difficulty whatsoever in raising money, especially in a Province like Punjab, where the agriculturist's stock-in-trade consists, to a large extent, of his cattle. All that is required is an influential lead, and it will be readily responded to by the merchants; they are the ones most interested, for cattle are the back-bone of their existence. So much so that Cattle Insurance Societies are being promoted in several districts of the Province, and it is satisfactory to find that the question of a financial guarantee by Government will shortly be referred to the Government of India.

The progress already achieved in cattle-breeding is largely due to the advice and supervision of the Civil Veterinary Department. The number of stud bulls working in the Punjab increased by eighty-two to 1,352, and 198 bulls were sent out by the Government cattle farm at Hissar. It is, indeed, satisfactory that the Chief Superintendent is hopeful of reviving the breed of Dhanni bulls.

The sheep results seem excellent. The popularity of three-quarter and half-bred merino rams continues, as evinced by the fact that the Hissar farm supplied a hundred and ten rams to private individuals, and three to the Jullunder District Board.

Mr. Branford is to be congratulated on his successful management of the Hissar cattle farm, and the officers of all grades of the Department have certainly won the thanks of His Honour the Lieut.-Governor for the efficient manner in which they have discharged their respective duties.

E. V. D. H.

We have before us the report of the Chief Veterinary Officer of N. Nigeria for 1919. For those whose imaginations carry them beyond these islands, and especially for those on whom Africa has cast her spell, it will prove interesting reading.

General.—We are informed that certain natives have received elementary instruction on live stock. After two years' observation it is considered that a very elementary instruction on stock subjects, until the general education has been vastly improved, has produced the best results, provided efficient supervision by a white man is available.

10. *Control of Contagious Disease.*—Rules for the control of contagious disease were promulgated more than three years ago, and copies

of these rules in Hausa were furnished to Emirs for circulation. Up to the present no very great result has been noticed. One is reminded of the controversy *re* white whole-time and part-time veterinary inspectors at home by the following passage : " While the responsibility of the district heads would be the same, the presence of a Native Stock Inspector in his district, whose sole work would consist in inspection of stock, would relieve the District Head of a very considerable amount of work which, if carried out by him, would render him unpopular with the people, with whom it is to his interest to keep on good terms." The importance of the assistance of the Native Police is insisted upon, while the effects of tribal sympathy and bribes are mentioned.

It is satisfactory to note that the reporting of contagious disease in districts where Native Inspectors are stationed is more satisfactory than in other parts.

Veterinary Officers.—During the year not more than one Veterinary Officer was in N. Nigeria at the same time.

Disease.—Rinderpest is the greatest scourge of the country. " The mortality in Kano Province amounted to 366,335 cattle, and as the returns for cattle in Bornu Province for 1919 are 237,587 less than those for 1918, it may be estimated that half a million head of cattle in these two provinces alone succumbed to rinderpest."

As the value of these cattle is about £5 per head, this represents a loss of approximately £2,500,000. The next more important diseases are pleuro-pneumonia, foot and mouth disease, trypanosomiasis and Septicæmia hæmorrhagica. With regard to trypanosomiasis the increased trade and the annual movement of Fulani herds from South to North make it likely that the spread of the disease will continue.

One can imagine the difficulties thrown upon the Veterinary Department by a tribe of wandering natives (the Fulani) continually treking through the country with large herds of cattle.

" 25. *Other Diseases.*—Among diseases which are suspected to exist in the country are blackwater, anthrax, and tick-borne diseases, but without a laboratory and an adequate veterinary staff it is doubtful if much headway will be made in the discovery of these and other obscure diseases."

" 28. It is understood that a sum of money has been approved by the Secretary of State for the commencement of a laboratory, and it is sincerely hoped that other essentials towards dealing with contagious disease in an effective way may be approved in the immediate future."

In conclusion, it certainly seems a reasonable hope of the Chief Veterinary Officer that more facilities, including more trained veterinaries, should be forthcoming ; moreover, especially taking the figures on rinderpest into consideration, such a procedure would appear to be merely a sound commercial investment for the country.

J. M. A.

FIGHTING SPORTS. By CAPT. LAWRENCE FITZ-BARNARD, M.R.C.V.S. Published by Odhams, 29, King Street, Covent Garden, W.C.2. Price £1. 1s.; 291 pp., with 10 Coloured Illustrations and 11 Figures in the Text.

THIS book, which deals with the fighting qualities of men and animals, will prove highly interesting to those of sporting tastes, as the author has had a very extensive experience.

Of the history and literature of cock-fighting Capt. Barnard writes with a thoroughly practical knowledge, and he is an undoubted authority on this most ancient of English sports.

In dealing with the subject of man-fighting, Capt. Fitz-Barnard says: "If properly managed it should give exhibitions of gameness and fortitude, and the never-say-die spirit (can we say this of the modern glove contest?), of infinite value to the spectators, so that their pride of race should be fostered and they should learn to endure what they have seen."

This, of course, is a comparison between fighting conducted under old prize-ring rules and boxing as conducted at the present time with gloves.

I have to disagree with the author on this opinion, since the modern intellectual enlightenment which finds its expression in humanitarianism, must undoubtedly associate itself with protection for the combatants' hands, so that he should in most instances be able to continue to exhibit the science in its true value. The old style of prize-ring fighting was too difficult of management, science was largely sacrificed, and mere ferocity indulged in.

This book will prove an invaluable addition to every sportsman's library, since, viewed from the two-fold aspect of record and exposition, it has achieved what no other work has ever attempted, and I have every confidence it will receive the success it rightly deserves.

W. S. K.

Parliamentary.

HOUSE OF LORDS.

WEDNESDAY, MARCH 23.

Danger of Smuggled Foreign Dogs.

LORD BLEDISLOE asked the Government whether there were good grounds for suspecting that during the last few months dogs had been smuggled into this country from abroad, thus evading the quarantine regulations and constituting a source of danger to the community in the matter of the transmission of hydrophobia; whether the maximum penalty for such evasion was for the first offence only £20; and

whether, seeing that such a fine, in the absence of any discretion on the part of the Court to substitute imprisonment therefor, was an insufficient deterrent to many such offenders, the Government would so amend the Diseases of Animals Act, 1894, as to empower the Court to impose in the case of a first offence the more drastic penalties provided thereby in the case of a second or subsequent offence. It seemed, he said, to be the fashion to breed as small a dog as possible of the varieties known as Pomeranians, Belgian griffons, Blenheim spaniels, and more particularly Pekingese, so that it was comparatively easy to smuggle into this country in ladies' muffs, or in small portable basket, dogs arriving across the Channel. There was also the danger, which was becoming a very real risk, of possibly larger dogs being transported to this country by aircraft, and more especially military aircraft. This suggestion was strengthened by the location of the various confirmed outbreaks of rabies, as published by the Ministry of Agriculture. During 1919 there were 155 confirmed cases of rabies, largely in the South and West of England, and more or less in the neighbourhood of the camps ; and in 1920, although the number was considerably reduced, no more than 42 outbreaks having taken place, much more than half those were in Wiltshire, which, of course, comprised Salisbury Plain, and in the three adjacent counties. Only five took place in all the rest of England. In the early part of this year the Army Council issued an instruction prohibiting the embarkation of any dogs with soldiers on transports or upon other means of conveyance to this country without a licence from the Minister of Agriculture. In the meantime, however, harm seemed to have been done by this illegal smuggling. A month ago the Masters of the Foxhounds Association passed a unanimous resolution urging the Government to take steps against this illicit importation of possibly diseased animals. A rabid dog was very seldom found wearing a muzzle, and it was therefore questionable whether muzzling, carried out sporadically in certain areas only, was an effective preventive of the spread of rabies.

Lord Willoughby de Broke, in supporting what Lord Bledisloe had said, remarked that not long ago a whole pack of foxhounds had to be destroyed. It seemed to him that lovers of Pekingese and Belgian griffons and such dogs appeared to lose all sense of public spirit in this regard, and it would be a great advantage if the Minister of Health would look into this matter and offer some kind of advice to the public against these dogs being allowed to lick dishes and plates in public restaurants as he had seen them do.

The Earl of Crawford (Chancellor of the Duchy of Lancaster) said, with regard to the danger of smuggling dogs into the country

by aircraft, he was informed that the Department of Agriculture, which had given the closest attention to the subject, had made inquiries and had satisfied itself that public aerodromes were now very well watched. The Department, however, was quite conscious that some smuggling might be attempted, and they were taking steps, which he would not particularise or describe, to reduce that danger to a minimum. As regarded fresh legislation, for the time being at any rate, the Board of Agriculture was of opinion that the present penalties, the danger of the quarantine, the guard of the Customs, and so forth, could be relied upon to keep disease out of the country; but if any evidence were forthcoming of fresh attempts to use the aeroplane for this specific purpose, the Ministry would be quite prepared to ask for increased penalties.

HOUSE OF COMMONS.

TUESDAY, MARCH 22.

Army Veterinary Service.

SIR L. WORTHINGTON-EVANS (Secretary for War) informed COL. SIR A. HOLBROOK that the question of the amalgamation of the Army Veterinary Service with the Remount Service was not a new one. He was informed that it would not be practicable for the Army Veterinary Service to perform the duties of the Remount Service in addition to their own duties, and it was not considered that a saving would accrue from a combination of the two services even if this were feasible.

NOTICES.

All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C.2. Telephone: Gerrard 4646. Telegrams: "Baillière Rand, London."

Letters for the JOURNAL, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements) should be addressed to the Editor.

Manuscript—preferably typewritten—should be on one side only of paper, marked with full name of author.

Illustrations for reproduction should be in good black or dark brown ink on white paper or card.

Copy for advertisements should be in the hands of the publishers—Baillière, Tindall and Cox—not later than the 25th of the month, or if proof is required not later than 23rd.

Annual Subscription for the British Empire, 21s. ($4.00) post free; or combined subscription with the "Veterinary News" (weekly), 35s., post free.